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Two new species of *Endophragmiella* from southern China

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Abstract —*Endophragmiella gardeniae* sp. nov., on dead branches of *Gardenia hainanensis,* and *E. machili* sp. nov., on dead branches of *Machilus grijsii,* are described and illustrated. They differ from other described *Endophragmiella* species in their obclavate or fusiform conidia with branches that developed a *Selenosporella*-like synanamorph. The specimens are deposited in Herbarium of Shandong Agricultural University, Plant Pathology (HSAUP) and Mycological Herbarium, Institute of Microbiology, Chinese Academy of Sciences (HMAS).

Key words — anamorphic fungi, taxonomy

Introduction

Sutton (1973) established *Endophragmiella* for two species, *E. pallescens* B. Sutton (the type species) and *E. canadensis* (Ellis & Everh.) B. Sutton. Subsequently, the genus was emended by Hughes (1979), who gave a very detailed account of conidiogenesis and generic concepts. *Endophragmiella* is characterized by monoblastic, integrated, terminal, determinate or percurrently extending conidiogenous cells on distinct, branched or unbranched conidiophores, and solitary, acrogenous, septate conidia with rhexolytic conidial secession. To date, 79 species and one variety have been recognized within the genus, all from temperate to tropical areas (Wu & Zhang 2005, Chen et al. 2008, Brackel & Markovskaja 2009, Castañeda Ruiz et al. 2010, Leão-Ferreira & Gusmão 2010). The species are differentiated primarily by conidial shape, size, septation, pigmentation, ornamentation, and presence or absence of a rostrum (Sutton 1973, Hughes 1979, Wu & Zhuang 2005).

During ongoing surveys of saprobic microfungi from forests of southern China, two interesting anamorphic species were collected from dead branches. The characters of their conidia and conidiogenesis suggest

they are appropriately disposed in the genus *Endophragmiella*, although morphologically distinct from all previously known species. Therefore, they are described here as new to science.

Taxonomy

Endophragmiella gardeniae Jian Ma & X.G. Zhang, **sp. nov.** Fig. 1

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Differs from all other *Endophragmiella* species except *E. machili,* in producing conidia with branches that develop a *Selenosporella*-type anamorph.

Type: China, Hainan Province: tropical forest of Bawangling, on dead branches of *Gardenia hainanensis* Merr. (*Rubiaceae*), 11 Dec 2009, J. Ma (**holotype** HSAUP H5149; **isotype** HMAS 146102).

Etymology: in reference to the host genus, *Gardenia*.

Colonies on natural substrate effuse, brown, hairy. Mycelium partly superficial and partly immersed in the substratum, composed of branched, septate, pale

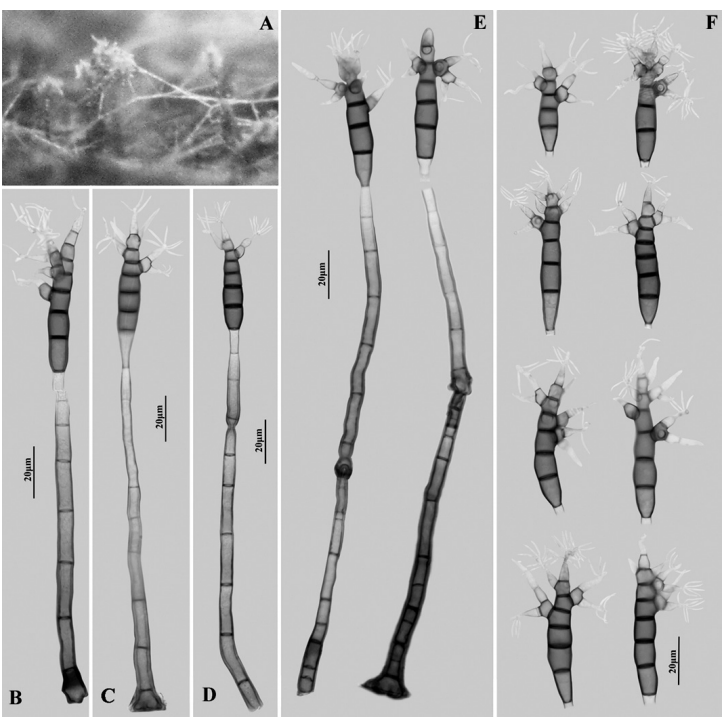

Fig. 1. *Endophragmiella gardeniae.* A. Colonies on natural substratum. B. Rhexolytic secession of conidium leading to a breakage of the conidiophore apex. C–E. Conidiophores with terminal conidia. In D–E conidiophores showing conidiogenous cells and percurrent extension. F. Conidia with branches that develop a *Selenosporella*-like synanamorph.

brown, smooth-walled hyphae, 1–3 µm thick. Conidiophores distinct, single or in groups, unbranched, cylindrical, erect, straight or flexuous, smooth, septate, brown to dark brown, 85–210 µm long, 4–7.5 µm wide, sometimes with 1 cylindrical percurrent extension. Conidiogenous cells monoblastic, integrated, terminal, indeterminate, cylindrical, smooth, pale brown to brown, 9–27 µm long, 4–5.5 µm wide. Conidial secession rhexolytic. Conidia acrogenous, solitary, obclavate or fusiform, 5–7-euseptate, slightly constricted at the septa, smooth, brown, apical cell pale brown to subhyaline, 41–66 µm long, 8–10.5 µm wide in the widest part, 2.5–4.5 µm wide at the truncate base, with a small collar of conidiogenous cell well, apical portion with branches that developed a *Selenosporella*-like synanamorph.

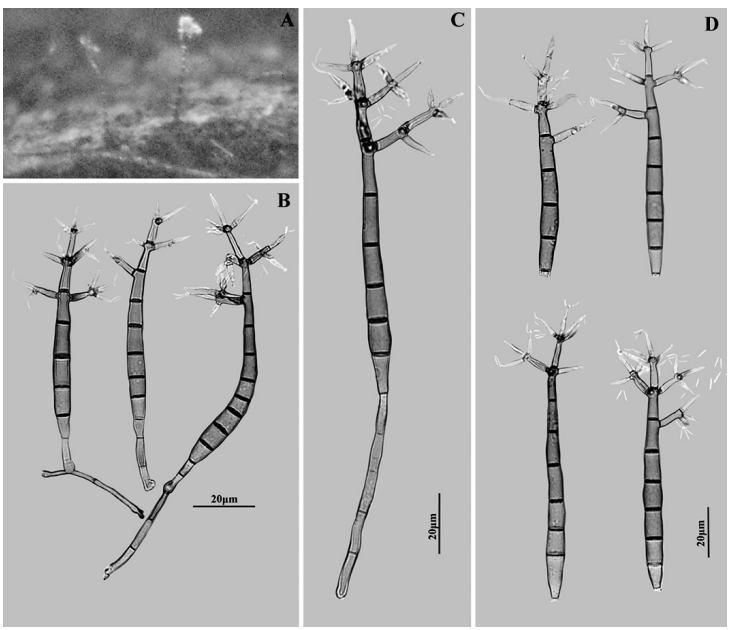

Fig. 2. *Endophragmiella machili*. A. Colonies on natural substratum. B–C. Conidiophores and conidia. D. Conidia with branches that develop a *Selenosporella*-like synanamorph.

Endophragmiella machili Jian Ma & X.G. Zhang, **sp. nov.** Fig. 2

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Differs from *Endophragmiella gardeniae* in its longer conidia with more septa.

Type: China, Fujian Province: subtropical forest of Mount Wuyi, on dead branches of *Machilus grijsii* Hance (*Lauraceae*), 15 Aug 2009, J. Ma (**holotype** HSAUP H5108–3; **isotype** HMAS 146103).

Etymology: in reference to the host genus, *Machilus*.

Colonies on natural substrate effuse, brown, hairy. Mycelium partly superficial and partly immersed in the substratum, composed of branched, septate, pale brown, smooth-walled hyphae, 1.5–3 µm thick. Conidiophores distinct, single or in groups, unbranched, determinate, cylindrical, erect, straight or flexuous, smooth, septate, brown, 4–57 µm long, 3–4.5 µm wide. Conidiogenous cells monoblastic, integrated, terminal, cylindrical, smooth, pale brown to brown, 7–14 µm long, 3–4 µm wide. Conidial secession rhexolytic. Conidia acrogenous, solitary, obclavate, straight or curved, 6–10-euseptate, sometimes slightly constricted at the septa, smooth, brown, apical cell pale brown to subhyaline, 93–135 µm long, 6–9 µm wide in the widest part, 2.5–4 µm wide at the truncate base, with a small collar of conidiogenous cell wall, apical portion with branches that developed a *Selenosporella*-like synanamorph.

Discussion

Endophragmiella gardeniae and *E. machili* are unlike the taxa hitherto placed in *Endophragmiella* in that their conidia have branches that develop a *Selenosporella*-like synanamorph. The initial thought was to introduce a new genus to accommodate these two species. However, Drs. Heredia and Arias showed us pictures of an *Endophragmiella* sp. (on decaying wood, Mexico, Veracruz, Acajete Municipal, Mesa de la Yerba, 19°33′N 97°01′W, 5 Dec. 2010, coll. G. Heredia & R.M. Arias) with many states of conidial development that are clearly the same as these two species. Therefore, we place them as new species in the genus *Endophragmiella*.

Endophragmiella gardeniae and *E. machili* bear some resemblance to *E. socia* (M.B. Ellis) S. Hughes (Hughes 1979) and *E. fagicola* P.M. Kirk (Kirk 1981) in conidial shape. However, the conidia of *E. machili* are longer and narrower than those of either *E. socia* (36–50 × 10.8–15.3 µm, 6–11-septate, usually 7) or *E. fagicola* (70–90 × 11–17 µm, usually 5-septate). *Endophragmiella gardeniae* also differs in conidial size and septation from *E. socia* and *E. fagicola*. In addition, *E. gardeniae* and *E. machili* produce conidia with branches that developed a *Selenosporella*-like synanamorph, a feature not found in *E. socia* and *E. fagicola*. *Endophragmiella gardeniae* differs from *E. machili* in its shorter conidia with fewer septa.

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